



KARL G. GRELL (1912–1994) , Outstanding Protistologist. In Memoriam.

Professor KARL G. GRELL suddenly died on October 4, 1994 in his 82th year of life. He was apparently in good health until his death and nobody expected this. Even after his retirement in 1980, he undertook some long trips to biological stations abroad, for instance to Australia, Japan or Jamaica, and collected there himself live material for his studies. His working room was full of cultures of his favourite plasmodial marine protists which he preferred to study alive. The international scientific community will miss this outstanding protistologist.

KARL G. GRELL was born on December 28, 1912, in Burg an der Wupper in the Rhine region in Germany. He went to school in Bad Kreuznach and thereafter studied

natural sciences at the Jena and Bonn universities. At the beginning, his scientific interests were mainly entomology, but as early as 1940 he published his first protistological paper on the nucleus and meiosis in the gregarine *Stylocephalus*, which is considered classical and cited even now. His scientific career was interrupted by World War II, when he had to join the army and to serve in a sanitary unit charged with malaria control. Still during the war, he managed to spend some time in Berlin-Buch in the laboratory of the famous Russian geneticist TIMOFEJEV-RESSOVSKY who worked there in exile. After the war, he became researcher at the widely renowned Max-Planck-Institute of Biology in Tübingen, where he worked in the department of the famous

biologist MAX HARTMANN (who also re-established the *Archiv für Protistenkunde*). Thereafter, GRELL's life was bound to the Eberhard-Karls-University in Tübingen, where he became the head of the Department of Zoology (since 1957 until his retirement) and was Dean of the Mathematical-Natural Science Faculty in 1962/63. After the war, K. GRELL's interests were mainly with protistology. At first he studied conjugation in the suctorian *Ephelota*, especially development of the new macronucleus. In 1949, he discovered there endomitosis leading to formation of bundles of homologous chromosomes. This led him to publishing an important theoretical paper on the nuclear dualism in ciliates and suctorians (1950), where he summarized arguments for polyploidy of the macronucleus and drew analogies between nuclear dualism in ciliates and germ line-soma differentiation in metazoans.

Another of his discoveries of the fifties is the description of a primitive extracellular coccidium, *Eucoccidium dinophilii*, parasite of the polychaete *Dinophilus*, and a thorough study of its life cycle and sexual differentiation. In these years, KARL GRELL made several research stays at the Villefranche Zoological Station on the Mediterranean Sea, in France. He studied there the radiolarian *Aulacantha* in which he discovered a new mechanism of polyploidization of the nucleus, with formation of composite chromosomes corresponding to entire genomes. Both these articles were published in 1953 in the re-opened (after the war) *Archiv für Protistenkunde*. All these studies permitted him to publish in 1953 a way-opening theoretical paper "The state of our knowledge of the structure of protozoan nuclei", which has not lost its importance even to-day.

In 1954, due to the Rockefeller stipendium, he spent several weeks in the U.S.A., where he worked for some time with T.M. SONNEBORN on genetics of ciliates and was much impressed by the work of L.R. CLEVELAND on sexual cycles of flagellates symbiotic in the gut of the cockroach *Cryptocercus*.

To the fifties and early sixties belongs also his important series of articles, published mainly in the *Archiv für Protistenkunde*, dealing with nuclear dualism in the agamonts of certain Foraminifera. The very existence of nuclear dualism was discovered there by KARL GRELL, and the entire life cycle of several heterokaryotic foraminifers has been deciphered using laboratory cultures. Some experiments with living agamonts have also been made, which permitted GRELL to put forward an original hypothesis about the mechanism of nuclear differentiation in the foraminifers.

In 1956, he published the textbook "Protozoology", in which for the first time he made emphasis on cytology, genetics and developmental biology of protozoa. The second edition (much supplemented) of this book appeared in 1968, and the English edition, in 1973.

Generations of protozoologists, especially in Germany, studied with these books.

Another well-known field of GRELL's interests was producing scientific and teaching films about protists, which he made usually in collaboration with the Institute of Scientific Film in Göttingen. Not less than a dozen of his films are still available.

In the seventies, he diverged somewhat from the protistology while studying (and culturing) a very primitive marine metazoan *Trichoplax*. He investigated both its cytological structure and embryonic development and reported his results in an important series of articles. He established for *Trichoplax* a new phylum, Placozoa.

In the eighties, he became enthusiastic with giant marine plasmodial protists which he collected himself throughout the world and managed to rear in his laboratory. This work he continued for years after his official retirement in 1980. He published his results mainly in the *Archiv für Protistenkunde*. In this way, he investigated the genera *Thalassomyxa* from Australia, Tunisia, Jamaica and Tenerife, *Corallomyxa* from Australia and Japan, *Leucodyction* from Japan, *Reticulosphaera* from Mexico and Japan, and others. His papers are documented with excellent photographs of living protists. He also was enthusiastic of filming (and later videorecording) these animals. Some of his films on plasmodial protists of the sea were shown at the last IX. International Congress of Protozoology in Berlin, 1993.

KARL GRELL contributed very much to the good functioning of the *Archiv für Protistenkunde*. From 1959 (Vol. 104) to 1983 (Vol. 127), i.e. well beyond his retirement, he was one of the editors of this journal and evaluated most publications in it. Later, up to his death, he remained member of the Advisory Board.

KARL GRELL received many honours during his life. He was honorary member of at least four protozoological societies. To mention only the last distinction, he was elected Honorary President of the IX. International Congress of Protozoology in Berlin in 1993. He has many pupils throughout Germany. Most of the heads of protistological laboratories in this country are either his former students or pupils of his pupils. He can thus be considered founder of a protistological school in Germany. This provides a clear contrast to the situation of about 1950, when he was almost the only active protozoologist with interests for cytology and genetics in Germany.

KARL GRELL lived a long and full life. He is survived by his wife, his children and his grand-children. Protistologists of the whole world mourn his passing.

IGOR B. RAIKOV, St. Petersburg,
in the name of the Editorial-board,
Advisory board and Publisher

I 91849
O.Ö. LANDESMUSEUM
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Duo. 11. 714/1995